

## REMARKS

Claims 1-7 and 9 are pending in this application. By this Amendment, claims 1, 3, 4, 7, and 9 have been amended as suggested by the Examiner to address Objections to the claims. Claims 7 and 9 have been amended to recite that  $R^7$  are linear or branched,  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl or  $C_7$ - $C_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; support for which can be found in claims 7 and 9. Claims 1, 7, and 9 have also been amended to recite that L is  $Si(R^8)_2$ , support for which can be found in claim 3.

Claims 12-14 are new, support for which can be found in claims 1 and 5. No new matter has been added as a result of this Amendment.

Applicants have also submitted with this Amendment a Supplemental Information Disclosure Statement. Applicants respectfully request that the references listed on the accompanying PTO-1449 form be considered by the Examiner and be made of record herein.

### *Claim Objections*

In response to various objections to claims 1, 3, 4, 7, and 9 appropriate correction has been made, as suggested by the Examiner. Reconsideration and withdrawal of the Objection respectfully is requested.

### *Claim Rejections*

#### *Double Patenting Rejections*

Claims 1-7 and 9 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of copending Application Number 10/536,857. In response to the provisional rejection, Applicants earnestly request that the Examiner hold this rejection in abeyance, since neither application is in allowable form, but for the double patenting rejections.

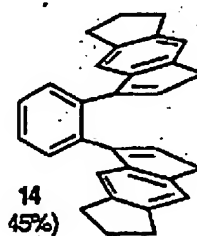
Rejections Under 35 U.S.C. § 102

A. Response to rejection of claims 7 and 9 under 35 U.S.C. 102(b) as being anticipated by Halterman et al.

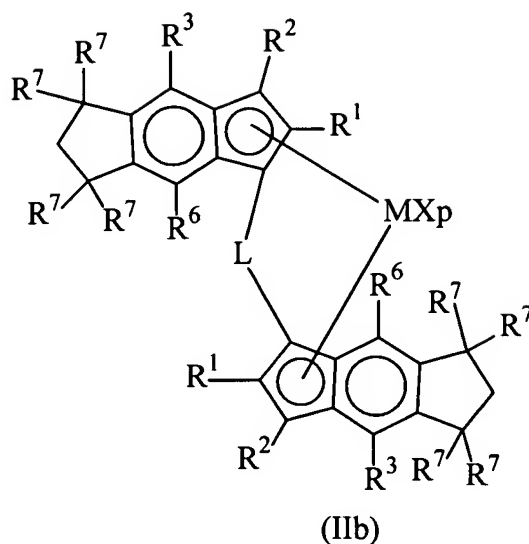
In response to the rejection of claims 7 and 9 under 35 U.S.C. 102(b) as being anticipated by *J. Organomet. Chem*, 1998, of Halterman et al. ("Halterman"), Applicants submit that the reference does not teach all the limitations of the recited claims, and traverse the rejection.

For a reference to anticipate an invention, all of the elements of that invention must be present in the reference. The test for anticipation under section 102 is whether each and every element as set forth in the claims is found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

The Examiner has cited Halterman's compounds 18 and 19, which correspond to metallocene compounds having the following ligand:



However, the compound of formula (IIb), recited in current claims 7 and 9, is clearly different since the substituents R<sup>7</sup> on the aliphatic ring are not hydrogen.



Moreover, the bridge L is  $\text{Si}(\text{R}^8)_2$ , which is completely different than Halterman's phenyl radical bridge. Reconsideration and withdrawal of the rejection respectfully is requested.

Rejections Under 35 U.S.C. § 103

B. Response to rejection of claims 7 and 9 under 35 U.S.C. §103(a) as being unpatentable over Halterman.

In response to the rejection of claims 7 and 9 under 35 U.S.C. 103(a) as being unpatentable over Halterman, Applicants respectfully submit that a *prima facie* case of Obviousness has not been made out, and traverse the Rejection.

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under §103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of non-obviousness. Accordingly, for the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable

expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §2142.

The Examiner has acknowledged in the Office Action that Halterman “does not show standard, ethylene (ethylidene) or dimethylsilylene bridged derivatives of the title metallocenes.” However, in addition, as discussed above, Halterman also does not teach, suggest, or disclose the metallocenes recited in claims 7 and 9 with respect to the substituted aliphatic ring. Therefore, in view of these fundamental differences, there would be no expectation of success in modifying Halterman’s structure to arrive at those recited in present claims 7 and 9, because there would be no predictability in doing so. In fact, the lack of predictability in modifying the disclosed metallocenes is discussed in Halterman:

The most widely applied types of complexes are the ethylidene-bridged or silyl-bridged *ansa*-bis(tetrahydroindenyl) metal dichlorides 1 and 2 ([3]a, b [4]a, b) which possess helical-type chirality and exhibit C<sub>2</sub>-symmetry both in the solid state and in solution. As more has become known about the conformational structure and reactivity of these *ansa*-metallocenes, it has become evident that subtle changes in the conformation of such deceptively simple complexes can result in large changes in reactivity ([5]a, b).  
\*\*\* In an attempt to produce conformationally better defined *ansa*-metallocenes we have undertaken the synthesis of *ortho*-phenyl-bridged *ansa*-metallocenes (page 1, left side, line 6 below Abstract to right side, line 15 below Abstract, emphasis added).

Therefore, Applicants respectfully submit that no *prima facie* case of Obviousness has been made out by the Examiner. However, even if a *prima facie* case of Obviousness had been made out, Applicants have demonstrated unexpected positive results to overcome such a case. For example, Table 1 illustrates the improvement in polymerization activity, and increased molecular weight relative to metallocene catalysts prepared in U.S. 5,786,432 and 5,830,821. Reconsideration and withdrawal of the Rejection respectfully is requested.

C. Response to rejection of claims 1-6 under 35 U.S.C. §103(a) as being unpatentable over Halterman in view of Wilson et al. and Rohrmann et al.

At the outset, Applicants note that due to a typographical error in the Office Action, it is not clear which claims are addressed by this rejection. For the purpose of this Response, Applicants assume that the Examiner intended to reject claims 1-6. If this is not the case, Applicants earnestly request that the Examiner provide clarification in the next Office Action.

In response to the rejection of claims 1-6 under 35 U.S.C. 103(a) as being unpatentable over Halterman in view of U.S. Patent No. 4,971,936 of Wilson et al. (“Wilson”) and U.S. Patent No. 5,455,366 of Rohrmann et al. (“Rohrmann”), Applicants respectfully submit that a *prima facie* case of Obviousness has not been made out, and traverse the rejection.

The threshold showing required under §103 has been discussed above.

The Examiner has acknowledged that Halterman does not state that the recited metallocenes should be used for polymerization of butene. As discussed above, the Examiner has also acknowledged that Halterman does not show standard, ethylene (ethylidene) or dimethylsilylene bridged derivatives of the title metallocenes. However, in addition, there would be nothing at all predictable about the Examiner’s suggested modifications to arrive at the current claims, since this would first require one skilled in the art to begin with a silyl-bridged metallocene. There is no motivation to begin with this structure, since Halterman clearly states that *ortho*-phenyl-bridged *ansa*-metallocenes are conformationally better defined. (page 1, right side, lines 12-15 under Abstract) Moreover, as discussed above, it has been acknowledged that Halterman does not disclose the polymerization of butene.

However, even assuming one skilled in the art would arrive at the recited catalyst for polymerizing butene, they would then be required, based on a second reference (Wilson) that teaches polymerization with a completely different class of catalyst (Ziegler Natta) for producing low isotactic polymers, to somehow envision that the net result of the modifications would yield highly isotactic polybutene. This clearly does not represent a situation with a finite, and in the context of the art, small or easily traversed, number of options that would convince an ordinarily skilled artisan of obviousness. *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.* Slip Op. 2007-1223, 2008 U.S. App. LEXIS 6786 (Fed. Circ., Mar. 31, 2008) Applicants therefore respectfully submit that for these reasons no *prima facie* case of Obviousness has been made out by the Examiner.

However, even if a *prima facie* case of Obviousness had been made out, Applicants have demonstrated unexpected positive results to overcome such a case. For example, Table 1 illustrates the improvement in polymerization activity, and increased molecular weight relative to metallocene catalysts prepared in U.S. 5,786,432 and 5,830,821. Reconsideration and withdrawal of the Rejection respectfully is requested.

D. Response to rejection of claims 1-7 and 9 under 35 U.S.C. §103(a) as being unpatentable over Rohrmann.

In response to the rejection of claims 1-7 and 9 under 35 U.S.C. 103(a) as being unpatentable over Rohrmann, Applicants respectfully submit that *prima facie* case of Obviousness has not been made out.

The threshold showing required under §103 has been discussed above.

The Examiner states in the rejection that “[u]sing Applicant’s nomenclature, substituents R<sup>3</sup> and R<sup>7</sup> form a ring.” Applicants respectfully disagree with the Examiner’s statement. In claim 1, R<sup>3</sup> is defined in the paragraph that states:

R<sup>2</sup>, R<sup>3</sup> and R<sup>6</sup>, equal to or different from each other, are hydrogen atoms or linear or branched, C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

R<sup>7</sup> is defined in claim 1 as follows:

R<sup>7</sup>, equal to or different from each other, are hydrogen atoms or linear or branched, C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements

As is clear, R<sup>3</sup> and R<sup>7</sup> do not form a ring. Further, even if Rohrmann taught, suggested or disclosed the metallocene structure, which it does not, polymerization of 1-butene is only one of eight olefins that can be polymerized, including ethylene, propylene, 1-butene, 1-hexene, 4-

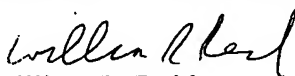
methyl-1-pentene, 1-octene, norbornene or norbonadiene (col. 12, lines 10-15) Of these, only ethylene and propylene are preferred (col. 12, line 15-16). Therefore, no reasonable expectation of success exists in modifying Rohrmann to arrive at claims 1-7 and 9, as suggested, because there would be no predictability in making such modifications. Reconsideration and withdrawal of the Rejection is respectfully requested.

Applicants respectfully request that a timely Notice of Allowance be issued in this case. Should the Examiner have questions or comments regarding this application or this Amendment, Applicant's attorney would welcome the opportunity to discuss the case with the Examiner.

The Commissioner is hereby authorized to charge U.S. PTO Deposit Account 08-2336 in the amount of any fee required for consideration of this Amendment.

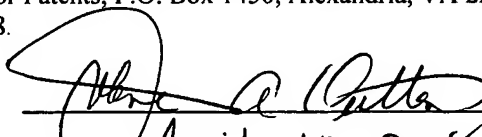
This is intended to be a complete response to the Office Action mailed December 13, 2007.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with sufficient postage thereon with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 10, 2008.

  
April 10 2008  
Date of Signature

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